COUNTY OF LEXINGTON, SOUTH CAROLINA

Public Works Stormwater Division

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NO DISCHARGE POND DESIGN GUIDANCE

Criteria for No Discharge Ponds:

1. All no discharge retention ponds are to be sized for the 100-yr storm event with no discharge.
2. Do not use the pond bottom for infiltration; use only the side slopes.
3. Side slopes are to be 3:1 (preferred) or 2:1 or 5:1 (range).
4. Bottom width of the pond must be at least twenty (20) feet, or four (4) times the depth of the pond, whichever is the larger.
5. Infiltration rates may be obtained from the Soil Survey Book of Lexington County, South Carolina. The permeability of subject soils are given as a range. Determine the lowest number for the range then take half of the lowest number for the infiltration rate. A second option is to have an acceptable infiltration test (Double Ring Method, etc.) performed by a soils testing lab. The borings for the proposed retention pond will need to be excavated to the determined depth of the bottom of the pond and then the infiltration test shall be performed. Use one-half (1/2) of the results determined by a soils testing lab as a Factor of Safety.
6. Show calculations that pond will dewater within a 72 hour period.

Example shown on the following pages.

Example

GIVEN: Pond in sandy soil with 3:1 side slopes and 10 ft. top width

GIVEN: Infiltration rate = 10 in/hr, therefore use 5 in/hr

	Elevation (ft.)	Contour Area (sq. ft)	Incremental Volume (cub. ft.)	Summed Volume (cub. ft.)	Allowable Infiltration Area (sq. ft)	Discharge (cfs)
Bottom Elevation →	100.00	5000.00	0.00	0.00	0.00	0.00
	101.00	5936.00	5468.00	5468.00	936.00	0.11
	102.00	6944.00	6440.00	11908.00	1944.00	0.26
	103.00	8024.00	7484.00	19392.00	3024.00	0.35
	104.00	9176.00	8600.00	27992.00	4176.00	0.48
	105.00	10400.00	9788.00	37780.00	5400.00	0.63
	106.00	11696.00	11048.00	48828.00	6696.00	0.77
	107.00	13064.00	12380.00	61208.00	8064.00	0.93

For example:

$$At\ Elevation = 105.00\ ft$$

$$Incremental\ Volume = \left(\frac{9,176\ ft^2 + \ 10,400 ft^2}{2}\right)(1\ ft) = 9,788\ ft^3$$
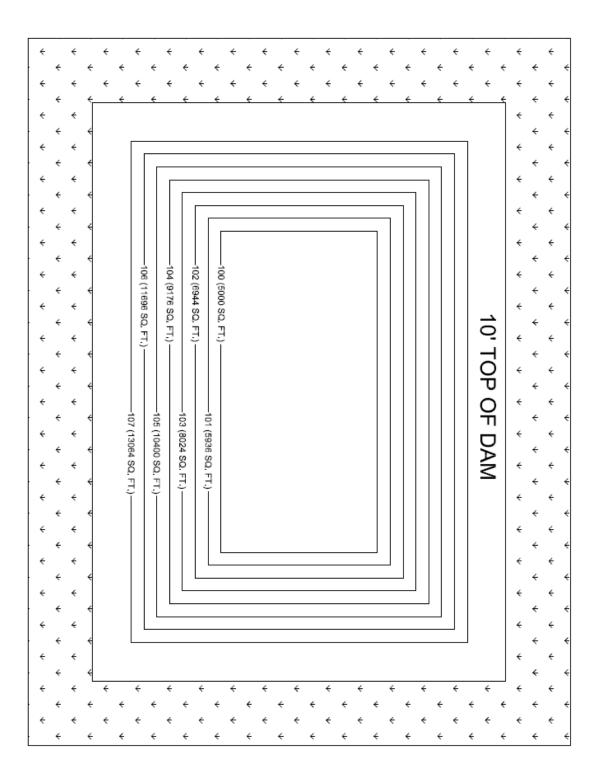
$$Summed\ Volume = 27,992\ ft^3 + 9,788 ft^3 = 37,780\ ft^3$$

$$Allowable\ Infilatraion\ Area = 10,400 ft^2 - 5,000 ft^2 = 5,400 ft^2$$

$$Discharge = \left(5\ ^{in}/_{hr}\right)\left(1\ ^{ft}/_{12\ in}\right)\left(1\ ^{hr}/_{3600\ sec}\right)(5,400\ ft^2) = 0.63\ cfs$$

See the following page for the example's pond schematic.

SAMPLE NO DISCHARGE POND

10' TOP OF DAM

100 (5000 SQ. FT.)
101 (5936 SQ. FT.)
102 (6944 SQ. FT.)
103 (8024 SQ. FT.)
104 (9176 SQ. FT.)
105 (10400 SQ. FT.)
106 (11696 SQ. FT.)
107 (13064 SQ. FT.)

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